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## DARK-SPORED AGARICS—I

### DROSOPHILA, HYPHOLOMA, AND PILOSACE

WILLIAM A. MURRILL

In MYCOLOGIA for January and March, 1918, a series of eight articles on the gill-fungi of tropical North America was concluded with a treatment of species having brown, purplish-brown, or black spores. On page 15 in the January number of that year the fourteen genera of the subtribe Agaricanae were keyed out, beginning with the sessile *Melanotus* and ending with *Coprinus* and *Clarkeinda*, in which the characters are more complex.

The present series of articles will deal with species occurring in temperate North America, except those confined to the Pacific Coast, which have already been considered for the most part in articles published in MYCOLOGIA some years ago. The key to the genera need not be repeated here. I shall, for convenience, begin with the larger, more fleshy species and take up the small, slender-stemmed ones later, reversing the natural order.

The three genera of the present article may be distinguished from others of the subtribe by a fleshy or fibrous stem, gills that do not deliquesce, and little or no veil, which does not form a definite ring on the stem. They may be separated from each other by the following key:

Lamellae adnate or adnexed.

Hymenophore solitary or subcespitose, rarely densely cespitose; hygrophanous, viscid, or squamulose.

*Drosophila*.

Hymenophore densely cespitose; surface firm, dry, glabrous.

*Hypholoma*.

Lamellae free.

*Pilosace*.

#### DROSOPHILA Quél. Ench. Fung. 115. 1886

Pileus hygrophanous, glabrous or nearly so, at least at maturity; spores pale, smooth.

Pileus dark-colored; spores  $5 \times 3 \mu$ .

1. *D. madeodisca*.

Pileus light-colored; spores larger.

Spores  $9-12 \mu$  long.

2. *D. pecosense*.

Spores  $7-9 \mu$  long.

- Pileus 1-2 cm. broad. 3. *D. fragilis*.  
 Pileus 2-6 cm. broad. 4. *D. appendiculata*.  
 Pileus floccose-scaly, grayish-white; spores small, dark, smooth. 5. *D. Storea*.  
 Pileus innately-fibrillose, becoming glabrous at times, some shade of reddish-brown; spores large, dark, distinctly tuberculose, and apiculate. 6. *D. lacrymabunda*.  
 Pileus glabrous, fibrillose, or squamulose; spores large, dark, smooth.  
 Pileus glabrous, bay-brown; spores not apiculate.  
 Surface moist, rugose. 7. *D. delineata*.  
 Surface viscid. 8. *D. Peckiana*.  
 Pileus large, reaching 10 cm. broad, densely and conspicuously covered with persistent, pointed scales. 9. *D. echiniceps*.  
 Pileus reaching 5 cm. broad, woolly or less conspicuously fibrillose-scaly.  
 Spores apiculate. 10. *D. rigidipes*.  
 Spores not apiculate. 11. *D. hololanigera*.

### 1. *Drosophila madeodisca* (Peck) comb. nov.

*Agaricus madeodiscus* Peck, Ann. Rep. N. Y. State Mus. 38: 88. 1885.

*Hypholoma madeodiscum* Sacc. Syll. Fung. 5: 1039. 1887.

*Hypholoma subaquilum* Banning & Peck, Ann. Rep. N. Y. State Mus. 44: 70. 1891.

Pileus thin, convex to expanded, the margin often upturned, gregarious to densely cespitose, 2-6 cm. broad; surface hygrophanous, smooth or rugose, slightly atomate at times, dull-fulvous or chestnut-colored when moist, becoming grayish or isabelline when dry; margin thin, even, silky-fibrillose at first; context concolorous, hygrophanous, edible, with mild taste and no characteristic odor; lamellae crowded, adnexed or slightly sinuate, pallid to purplish-brown; spores short-oblong or oblong-ellipsoid, blunt at both ends, smooth, guttulate, pale-purplish-brown under the microscope, usually about  $4.5 \times 3 \mu$ , rarely reaching  $7 \times 4 \mu$ ; stipe equal or somewhat thickened at the base, glabrous or slightly fibrillose, white or pallid, shining, usually hollow, 4-8 cm. long, 3-8 mm. thick; veil white, appendiculate, evanescent.

TYPE LOCALITY: Adirondack Mountains, New York.

HABITAT: On dead deciduous or coniferous wood, or in rich soil or leaf-mold in woods.

DISTRIBUTION: Eastern Canada to North Carolina and west to Colorado.

ILLUSTRATION: Mycologia 7: pl. 158, f. 7.

This species is very abundant in the northeastern United States, varying considerably in size and habit, but easily distinguished from *D. appendiculata* by its darker color and smaller spores, which are very blunt at both ends. When I described and figured it in MYCOLOGIA in 1915 as *H. Candolleanus*, I had not examined authentic European material, which shows at once much larger spores. *H. subaquilum* is represented at Albany by a dozen or more plants from Piseco and Lake Pleasant, New York, displayed on two herbarium sheets. Peck states that the spores are 4-5  $\mu$  long, which is correct. *H. madeodiscum* is represented by only three plants, which do not appear different from the specimens of *H. subaquilum*, and the spores measure 4-5  $\times$  3  $\mu$ , although Peck describes them as 8-10  $\times$  5-6  $\mu$ . A specimen at Albany determined as *H. madeodiscum* by Burt, who collected it in Vermont, has been changed by Peck to *H. appendiculatum*.

## 2. *Drosophila pecosense*<sup>1</sup> (Cockerell) comb. nov.

*Hypholoma pecosense* Cockerell, Jour. Myc. 10: 108. 1904.

Pileus 2.5 to nearly 4 cm. in diameter, slightly convex, sometimes slightly umbonate, margin nearly even, bearing remains of a veil as light-yellow, irregular scales; surface smooth, slightly inclined to be viscid, not at all striate, scaly or silky, creamy-white, more ochraceous on the disk, but always pallid; context not changing color on bruising or breaking, taste mild, not bitter; lamellae pale-purplish-gray, inclined to be white at the junction of the stipe, minutely white-furfuraceous on the edges; spores pale-purplish-brown under the microscope, broadly ellipsoid to slightly ovoid, 9-12  $\times$  5-8  $\mu$ ; stipe yellowish-white or very pale ochraceous, slightly striate from the very narrowly decurrent lamellae, white-furfuraceous, otherwise smooth and shining, hollow near the apex, 5.5 to nearly 9 cm. long.

TYPE LOCALITY: Pecos, New Mexico.

HABITAT: Unknown.

DISTRIBUTION: Unknown.

<sup>1</sup> Since the above was put into type I have located the original specimens sent by Cockerell to Earle and they prove to be a species of *Stropharia*. See my next article.

The author describes the spores as purple-brown, quite dark, oval,  $12 \times 8 \mu$ ; but the specimens show them to be as above noted.

### 3. *Drosophila fragilis* (Peck) comb. nov.

*Hypholoma fragile* Peck, Bull. N. Y. State Mus. 131: 22. 1909.

Pileus thin, fragile, conic or subcampanulate, becoming convex, obtuse or subumbonate, 1.2–2.4 cm. broad; margin thin, at first appendiculate with fragments of the white veil; surface floccose-squamulose when young, glabrous when mature, yellowish, grayish or subochraceous, sometimes more highly colored in the center; lamellae thin, narrow, crowded, adnate, whitish or pallid, becoming purplish-brown; spores  $8-10 \times 4-5 \mu$ ; stipe slender, fragile, stuffed or hollow, glabrous or minutely floccose, white or pallid, 2.5–5 cm. long, 2–3 mm. thick.

TYPE LOCALITY: Star Lake, St. Lawrence County, New York.

HABITAT: On decayed wood and leaves in damp woods.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: Bull. N. Y. State Mus. 131: *pl. V, f. 1-7*.

The description of this species reads very much like that of *D. appendiculata*, but the specimens appear different. I find the spores ovoid to ellipsoid, smooth, pale-yellowish-brown under the microscope,  $8-9 \times 3.5-5 \mu$ . The specimens from Painted Post are different, probably *D. appendiculata*. Fresh collections might enable one to place the species definitely under *D. appendiculata*.

### 4. *DROSOPHILA APPENDICULATA* Quél. Ench. Fung. 116. 1886

*Agaricus appendiculatus* Bull. Herb. Fr. *pl.* 392. 1788.

*Hypholoma appendiculatum* Quél. Champ. Jura Vosg. 115. 1872.

*Agaricus saccharinophilus* Peck, Ann. Rep. N. Y. State Mus. 25: 78. 1873.

*Agaricus incertus* Peck, Ann. Rep. N. Y. State Mus. 29: 40. 1878.

*Agaricus hymenoccephalus* Peck, Ann. Rep. N. Y. State Mus. 31: 34. 1879.

*Hypholoma cutifractum* Peck, Bull. Torrey Club 22: 490. 1895.

*Hypholoma flocculentum* McClatchie, Proc. S. Cal. Acad. Sci. 1: 381. 1897.

*Stropharia irregularis* Peck, Bull. Torrey Club 27: 16. 1900.

Pileus thin, fragile, ovoid or subcampanulate, then expanded, gregarious or cespitose, 2-6 cm. broad; surface hygrophanous, varying in color from white or pale-yellowish to light-brown or dark-honey-yellow, fading when old and dry, usually cracking with age, often radiately-wrinkled, glabrous or whitish-pulverulent, rarely floccose-scaly; margin sometimes purplish in tint, often wavy, adorned with fragments of the white, flocculent, fugacious veil; context thin, white, edible, of excellent flavor; lamellae adnate, crowded, narrow, white to purplish-brown, with the edges often uneven; spores ellipsoid or ovoid, smooth, purplish-brown,  $7-8 \times 4-4.5 \mu$ ; cystidia sac-shaped,  $40 \times 15 \mu$ ; stipe slender, equal, straight, hollow, easily splitting, white, glabrous below, pruinose or slightly furfuraceous at the apex, 2.5-7 cm. long, 2-6 mm. thick; veil white, appendiculate, evanescent or rarely persisting as an annulus.

TYPE LOCALITY: France.

HABITAT: On and about stumps, roots, trunks, and leaves of deciduous trees.

DISTRIBUTION: Temperate and tropical North America; also in Europe.

ILLUSTRATIONS: Atk. Stud. Am. Fungi f. 26, 27; Boud. Ic. Myc. 1: pl. 137; Bull. Herb. Fr. pl. 392, f. A, B, D; Bull. Conn. Geol. Nat. Hist. Surv. 15: pl. 27; Bull. N. Y. State Mus. 5: pl. 58, f. 13-20; Bull. U. S. Dept. Agr. 175: pl. 27, f. 2; Cooke, Brit. Fungi pl. 547 (587); Gill. Champ. Fr. pl. 130 (352); Hard, Mushr. f. 262; Mem. N. Y. State Mus. 3: pl. 60, f. 1-9; McIlv. Am. Fungi pl. 97a; Murrill, Ed. Pois. Mushr. f. 20; Mycologia 4: pl. 56, f. 1, 2; N. Marsh, Mushr. Book, pl. 22; Pat. Tab. Fung. 1: f. 349; Ricken, Blätterp. Deutschl. pl. 64, f. 5; Sow. Engl. Fungi pl. 324; Trans. Wisc. Acad. Sci. 17: pl. 83, f. C; 18: pl. 22, 23.

Two color forms of this common species have been figured in MYCOLOGIA. It is much paler than *D. madeodisca*, although resembling it in some respects. Some American mycologists have been uncertain regarding its identity, but Bulliard's figures A, B, and D are very clear. His figure C might be misleading, which, according to him, represents a sodden condition after long rains. The spores, like the plant, vary considerably. They are usually ellipsoid,  $7-8 \times 4-4.5 \mu$ , but may be  $5.5-9 \times 4-5 \mu$ . Few mushrooms are more delicate in flavor or more easily digested.

5. *Drosophila Storea* (Fries) comb. nov.

*Agaricus Storea* Fries, Epicr. Myc. 223. 1838.

*Hypholoma lacrymabundum* Quél. Champ. Jura Vosg. 113. 1872.

*Stropharia cotonea* Quél. Bull. Soc. Bot. Fr. 23: 328. 1877.

*Agaricus hypoxanthus* Phil. & Plowr. Grevillea 13: 48. 1884.

? *Agaricus populinus* Britz. Hymen. Südb. 4: 157. 1885.

*Hypholoma aggregatum* Peck, Ann. Rep. N. Y. State Mus. 46: 106. 1893.

*Hypholoma Pseudostorea* W. G. Sm. Jour. Bot. 41: 286. 1903.

Pileus convex or subcampanulate to subumbonate, densely cespitose, 3–5 cm. broad; surface dry, white or grayish, darker and sometimes rugulose on the disk, ornamented with a few appressed, pale-umbrinous or avellaneous, floccose-fibrillose scales; context white, soft, watery, thick, thin at the margin, odorless, mild; lamellae adnate or sinuate, rather crowded, whitish, becoming dark-brown, whitish and sometimes weeping on the edges; spores oblong-ellipsoid, smooth, brown,  $6-8 \times 3-4 \mu$ ; stipe long, slender, equal, fibrillose, striate at the apex, white to discolored, often yellowish at the base when bruised, solid or hollow, 5–10 cm. long, 4–10 mm. thick; veil white, thick, often forming a fragmentary annulus.

TYPE LOCALITY: Sweden.

HABITAT: In rich soil in woods, usually about logs or stumps. It seems fond of beech.

DISTRIBUTION: New York, New Jersey, Michigan, and probably in other parts of the eastern United States; also in Europe.

ILLUSTRATIONS: Bull. N. Y. State Mus. 54: pl. 79, f. 8–14; Bull. Soc. Myc. Fr. 23: pl. 2, f. 5; Cooke, Brit. Fungi pl. 543 (580); Fries, Ic. Hymen. 2: pl. 134, f. 1; Mycologia 6: pl. 113, f. 5.

This species was first named by Fries from specimens collected by himself about beech trees in Sweden, the covering of matted hairs suggesting to him the specific name used. He saw it only twice, and it is rare in America, although several times collected about New York City. The plants first seen by Peck from Alcove were considerably smaller than the European form, but his variety *sericeum*, from North Bolton, is larger and smoother. Those interested in the rather complicated history of the species may refer to Maire's notes in Bull. Soc. Myc. France 27: 441–445. 1911,

or to condensed statements of his views by Kauffman under *H. lacrymabundum* in "The Agaricaceae of Michigan" and E. T. Harper in *Mycologia* 10: 231-234. 1918. According to Kauffman, cystidia are present in this species, being rather abundant, ventricose, 30-40 x 12-15  $\mu$ .

6. *DROSOPHILA LACRYMABUNDA* (Bull.) Quél. Ench. Fung. 115.  
1886

*Agaricus lacrymabundus* Bull. Herb. Fr. pl. 194. 1784.

*Agaricus velutinus* Pers. Syn. Fung. 409. 1801.

*Hypholoma rugocephalum* Atk. Stud. Am. Fungi 30. 1900.

*Hypholoma Boughtoni* Peck, Bull. N. Y. State Mus. 139: 23.  
1910.

Pileus rather fleshy, ovoid to expanded, sometimes broadly umbonate, solitary or cespitose, 5-8 cm. broad; surface fulvous to isabelline with intermediate shades, darker on the umbo, covered when young with appressed, matted fibers, which may disappear with age or collect into small squamules, the cuticle cracking areolately at times; margin not striate; context very thin, concolorous, with a mild or slightly disagreeable taste, the odor not characteristic; lamellae rather crowded, sinuate-adnexed or adnate, somewhat ventricose, yellowish, shading to umber and spotted with black and rusty-brown as the spores mature, whitish on the edges; spores nearly lemon-shaped, apiculate, opaque, distinctly tuberculose, very dark-brown under the microscope, black in mass, 8-10 x 4-7  $\mu$ ; cystidia abundant, 40 x 9  $\mu$ ; stipe equal or slightly enlarged below, subconcolorous, nearly white at the apex, hollow, 5-10 cm. long, 8-12 mm. thick; veil of whitish, fibrous tufts adhering partly to the margin of the pileus and partly to the stipe.

TYPE LOCALITY: France.

HABITAT: In grass or weeds in the open or among leaves or about old stumps in thin woods.

DISTRIBUTION: Eastern United States; also in Europe.

ILLUSTRATIONS: Atk. Stud. Am. Fungi f. 28, 29; Bull. Herb. Fr. pl. 194, pl. 526 (better); Cooke, Brit. Fungi pl. 563 (582); *Mycologia* 7: pl. 158, f. 2; Peck, Bull. N. Y. State Mus. 139: pl. 2, f. 1-7; Sowerby, Engl. Fungi pl. 41; Trans. Wisc. Acad. Sci. 17: pl. 79; and others.

This interesting species has received much attention from my-



cologists, both in Europe and America (See Mycologia 7: 116. 1915). The spores are distinctive, being apiculate and plainly tuberculose. *D. echiniceps*, with which it has been confused by some, has smooth spores and larger, more persistent squamules. Types of *Hypholoma rugocephalum* and *H. Boughtoni* have been carefully compared and prove to be only forms of Bulliard's original plant, which ranges through Europe as far northward as Sweden and through the northern United States westward to Minnesota. This species, which certainly is very distinct, was used as the type of three different genera proposed between 1886 and 1889 by Patouillard, Schroeter, and Fayod.

7. *Drosophila delineata* (Peck) comb. nov.

*Hypholoma delineatum* Peck, Bull. N. Y. State Mus. 150: 83. 1911.

Pileus fleshy, thin, convex to subumbonate, or nearly plane, often slightly depressed in the center, 2.5–5 cm. broad; surface moist, glabrous, rugose or radiately wrinkled, commonly marked toward and on the margin even when dry with irregular radiating lines or ridges, occasionally wavy or irregular on the margin and not striate, brown, tawny-brown, or reddish-brown, often darker on the disk; context whitish; lamellae thin, crowded, adnate, flesh-colored to brown, becoming blackish-brown with age or when bruised; spores smooth, ellipsoid, not apiculate, 8–10 × 4–6  $\mu$ ; cystidia scarce, flask-shaped or broadly fusiform, 40–60 × 16–20  $\mu$ ; stipe equal, glabrous or subfibrillose, hollow, pallid or colored like the pileus, 3–7 cm. long, 3–8 mm. thick.

TYPE LOCALITY: Port Jefferson, Suffolk County, New York.

HABITAT: On the ground or on decayed wood.

DISTRIBUTION: Massachusetts, New York, West Virginia, Indiana, and Missouri.

ILLUSTRATION: Trans. Wisc. Acad. Sci. 18: pl. 21, f. D.

8. *Drosophila Peckiana* (Kauffm.) comb. nov.

*Hypholoma Peckianum* Kauffm. Agar. Mich. 1: 258. 1918.

Pileus 1–2 cm. broad, convex, obtuse, subexpanded, margin bordered by white, silky fibrils from the remains of the veil, even; surface viscid, glabrous, bay-brown, blackish on the disk, paler on

the margin; context whitish, moderately thin, thicker at the center, odor and taste none; lamellae adnate, rounded behind, 2-3 mm. broad, abruptly narrower in front, close, at first flesh-colored, then dark-purplish-brown, white-fimbriate on the edges; spores ventricose-ellipsoid, pointed at each end, smooth, tinged with purple under the microscope, purplish-brown in mass,  $10-12 \times 5-6 \mu$ ; cystidia none; sterile cells on the edge of the lamellae clustered, linear-cylindric, obtuse, about  $20 \times 4 \mu$ ; stipe thick, equal, white-floccose above, innately-fibrillose elsewhere, pallid to brownish, brown within, except the white pith, at length hollow, flexuous, 3-4 cm. long, 2-2.5 mm. thick.

TYPE LOCALITY: New Richmond, Michigan.

HABITAT: On debris of leaves and decayed wood in woods of hemlock, beech, maple, etc.

DISTRIBUTION: Known only from the type locality.

#### 9. *Drosophila echiniceps* (Atk.) comb. nov.

*Hypholoma echiniceps* Atk. Ann. Myc. 7: 370. 1909.

Pileus convex, firm, fleshy, cespitose, 3-10 cm. broad; surface ochraceous-brown, with dense, pointed, seal-brown scales; context white, then changing to pale-saffron-yellow, with very slight taste and odor; lamellae somewhat narrowed in front, slightly rounded behind, adnate, rich-purple-brown with Indian-purple tint, whitish on the edges, 6-8 mm. broad; spores subellipsoid, inequilateral, the outer end sometimes slightly narrower, smooth as seen under oil immersion,  $7-9 \times 3.5-5 \mu$ ; cystidia cylindric, thin-walled,  $10-12 \mu$  thick, projecting 30-40  $\mu$ ; stipe white, covered up to the evanescent annulus with fibrous, seal-brown scales, even, fleshy, fibrous, hollow, white to yellow within, 12-14 cm. long, 8-12 mm. thick; veil ample when young, becoming appendiculate and forming an evanescent, superior annulus.

TYPE LOCALITY: Ithaca, New York.

HABITAT: On the ground or about dead stumps or roots.

DISTRIBUTION: Ontario, New York, Pennsylvania, Ohio, Michigan, and Wisconsin.

ILLUSTRATIONS: Trans. Wisc. Acad. Sci. 17: pl. 77, f. B, and pl. 78.

This species is confused by Peck with *D. lachrymabunda*. He had a number of collections from New York and elsewhere.

10. ***Drosophila rigidipes*** (Peck) comb. nov.

*Hypholoma rigidipes* Peck, Bull. N. Y. State Mus. 139: 24. 1910.

Pileus fleshy, thin, convex or broadly convex, gregarious, 2.5–5 cm. broad; surface dry, fibrillose-squamulose, tawny-brown, often reddish on the disk; context whitish, with a mild taste; lamellae close, narrow, slightly sinuate, adnexed, brownish-red, becoming dark-purplish-brown or black; spores ellipsoid, apiculate, 10–12 x 6–8  $\mu$ ; stipe slender, rigid, equal, hollow, fibrillose-squamulose, concolorous or a little paler than the pileus, 5–10 cm. long, 4–6 mm. thick.

TYPE LOCALITY: North River, Warren County, New York.

HABITAT: Damp places among tall herbs.

DISTRIBUTION: New York and Massachusetts.

ILLUSTRATIONS: Bull. N. Y. State Mus. 139: *pl.* 3, *f.* 1–6.

The spores of Peck's type are slender, smooth, very dark, apiculate, 8.5–10 x 6–7  $\mu$ . Two collections made by me in the Adirondacks have spores that are narrower, more inequilateral, and somewhat lighter in color, measuring 9–10.5 x 5  $\mu$ . The plants are also much less fibrillose-squamulose, appearing almost glabrous in dried specimens. In spite of these differences, however, I hesitate to separate them as a distinct species.

11. ***Drosophila hololanigera*** (Atk.) comb. nov.

*Hypholoma hololanigerum* Atk. Ann. Myc. 7: 371. 1909.

Entire hymenophore covered with dense, long, delicate, whitish, fibrous scales. Pileus ovoid to convex, fragile, gregarious, 2–2.5 cm. broad; surface hygrophanous, watery-brown, becoming pale-ochraceous-buff to pinkish-buff on drying, not striate; lamellae elliptic, adnate, purplish-brown, whitish on the edges; spores sub-ellipsoid, slightly inequilateral, reddish-purple, smooth, 7–9 x 3.5–4.5  $\mu$ ; cystidia ellipsoid, stalked, 40–50 x 12–15  $\mu$ ; stipe slender, hollow, fragile, even, white with a very pale pink tint, 6–7 cm. long, 4–5 mm. thick.

TYPE LOCALITY: Ithaca, New York.

HABITAT: On very rotten wood in woods.

DISTRIBUTION: Known only from the type locality.

The type of this species has been destroyed by insects, leaving only the spores, a bit of stipe, and the description.

## DOUBTFUL AND EXCLUDED SPECIES

*Drosophila atrofolia* (Peck) Murrill, *Mycologia* 4: 303. 1912. Specimens at Albany, so named by Peck, collected by Lloyd in Ohio, are specifically distinct from the types collected by McClatchie in California.

*Hypholoma Candolleanus* (Fries) Quél. Champ. Jura Vosg. 115. 1872. (*Agaricus Candolleanus* Fries, *Obs. Myc.* 2: 182. 1818.) Given the long name, *Agaricus violaceolamellatus*, by DeCandolle in *Flora France* 2: 153, which Fries changed as above. Some claim that it is not distinct from *D. appendiculata*, which often shows violet or purplish colors in its young gills at one stage and has similar spores. Specimens from Bresadola show smooth, broadly ellipsoid or ovoid spores measuring  $7-9 \times 4-5 \mu$ . At Kew the two species seem exactly the same. Peck says his *H. madeodiscum* differs in having white gills at early stages. He has a sheet with plants from North Greenbush, New York, marked "*H. Candolleanus*. Spores  $8-10 \times 4-5 \mu$ . *H. velutinum leiocephalum* B. & Br." Also a packet from Mt. McGregor. The characters usually ascribed to *H. Candolleanus* as distinct from *H. appendiculatum* are the violet color of the young gills, the darker color of the pileus, and the striations at the apex of the stipe.

*Hypholoma comatum* Atk. Proc. Am. Phil. Soc. 57: 355. 1918. Described from specimens collected at Ithaca, New York, in 1917. Type not seen.

*Hypholoma confertissimum* Atk. Proc. Am. Phil. Soc. 57: 355. 1918. Described from specimens collected near Oakland, Maryland, in 1917. Type not seen.

*Hypholoma coronatum* (Fries) Sacc. Syll. Fung. 5: 1038. 1887. (*Agaricus coronatus* Fries, *Hymen. Eur.* 295. 1874.) Reported several times from North America. Authentic specimens show it to be very near *D. appendiculata* (if not that species), with denticiform-appendiculate veil making the margin look like the edge of a crown, as shown in Fries, *Ic. Hymen. pl.* 134, f. 3. Morgan says *H. subaquilum* is *H. coronatum*, but that can not be true, because the spores of the latter measure  $7-9 \times 3.5-5 \mu$  and are ellipsoid with rounded ends. At Albany, several specimens called *H. coronatum* by Peck are spread on a sheet marked "Menands, N. Y.,

Peck. Spores ellipsoid,  $6-8 \times 4-5 \mu$ ." These are considerably darker than typical specimens from Europe. Compare Kauffman's description, except that of the spores, with mine of *D. madeodisca*.

*Drosophila hydrophila* (Bull.) Quél. Ench. Fung. 116. 1886. Reported several times from America. Specimens so named by Peck, collected by Miss White in Maine, are *Psilocybe conissans* Peck. Kauffman retains the species in *Hypholoma*, rather than *Pilosace*, because the gills are "adnate-seceding." See his notes on page 266 of his book, where he refers to the disagreement regarding spores. I find them in specimens from Bresadola, who knows Bulliard's plants exceptionally well, to be broadly ellipsoid, blunt at the ends, smooth, pale-purplish-brown under the microscope,  $4-5 \times 3.5 \mu$ —very near those of *D. madeodisca*.

*Hypholoma populinum* Britz. var., Kauffm. Agar. Mich. 1: 261. 1918. Maire finds these subtriangular spores in *Drosophila Storea*.

#### HYPHOLOMA (Fries) Quél. Champ. Jura Vosg. 112. 1872

Pileus brick-red.

1. *H. lateritium*.

Pileus yellow, often red on the disk.

Taste bitter.

2. *H. fasciculare*.

Taste mild.

3. *H. capnoides*.

#### I. HYPHOLOMA LATERITIUM (Schaeff.) Quél. Champ. Jura Vosg. 112. 1872

*Agaricus lateritius* Schaeff. Fung. Bavar. Ind. 22. 1774.

*Agaricus sublateritius* Fries, Epicr. Myc. 221. 1838.

*Agaricus perplexus* Peck, N. Y. State Cab. 23: 99. 1872.

Pileus convex to nearly plane, slightly umbonate at times, generally cespitose, 3-8 cm. broad; surface smooth, dry, glabrous, latericeous to bay; margin cream-colored to ochraceous; context mild or bitterish, white or nearly so, becoming yellow with age; lamellae adnate, somewhat rounded, sometimes slightly decurrent, thin, narrow, crowded, whitish or pale-yellow, becoming greenish, and finally purplish-brown from the ripening of the spores; spores ellipsoid, smooth, purplish-brown,  $7-8 \times 4 \mu$ ; cystidia few,  $36 \times 12 \mu$ ; stipe thick, subequal, firm, stuffed or hollow, glabrous or slightly fibrillose, stramineous above, ochraceous or reddish below,

ornamented with an arachnoid ring when young, which becomes conspicuous by reason of the spores which collect upon it, 5-12 cm. long, 5-12 mm. thick.

TYPE LOCALITY: Bavaria.

HABITAT: On or about old trunks or stumps of deciduous trees in autumn.

DISTRIBUTION: Eastern North America; also in Europe.

ILLUSTRATIONS: *Atk. Stud. Am. Fungi f. 25*; *Bull. Conn. Geol. Nat. Hist. Surv. 3: pl. 25*; *Bull. U. S. Dept. Agr. 175: pl. 27, f. 1*; *Cooke, Brit. Fungi pl. 557 (572), pl. 558 (573)*; *Gill. Champ. Fr. pl. 130 (357)*; *Hard. Mushr. f. 265, 266*; *Peck, Ann. Rep. N. Y. State Mus. 49: pl. 47, f. 11-18*; *Peck, Mem. N. Y. State Mus. 4: pl. 60, f. 10-17*; *Murrill, Ed. Pois. Mushr. f. 19*; *Mycologia 1: pl. 1, f. 1*; *N. Marsh. Mushr. Book, pl. 21, 23*; *Richon & Roze, Atl. Champ. pl. 25, f. 10-13*; *Ricken, Blätterp. Deutschl. pl. 65, f. 2*; *Schaeff. Fung. Bavar. pl. 49, f. 6, 7*; *Trans. Wisc. Acad. Sci. 17: pl. 72, 73*; *18: pl. 19*.

This common autumnal species, which is ordinarily known as *Hypholoma sublateritium* or *H. perplexum*, was first described by Schaeffer as *Agaricus lateritius*, but on his plate he unfortunately used plants of *H. fasciculare* for the younger stages of his species, and this has caused confusion. Hudson referred to this plate and to Schaeffer's name when he described his *A. fascicularis*.

2. *HYPHOLOMA FASCICULARE* (Huds.) Quél. *Champ. Jura Vosg.*  
113. 1872

*Agaricus fascicularis* Huds. *Fl. Angl. ed. 2. 615. 1778.*

Pileus fleshy, convex to expanded, often obtuse or umbonate, cespitose, about 5 cm. broad; surface dry, smooth, glabrous, sulfur-yellow or lemon-yellow, flavo-luteous to reddish-bay on the disk; context yellow, bitter; lamellae adnate, crowded, linear, sulfur-yellow, becoming greenish and finally olive-brown; spores ovoid or ellipsoid, smooth, very pale yellowish under the microscope, 6-7 x 3-4  $\mu$ ; stipe slender, flexuous, smooth, glabrous or fibrillose, usually hollow, sulfur-colored to lemon-yellow; veil slight, fibrillose, pale-yellow.

TYPE LOCALITY: England.

HABITAT: Dead wood of all kinds.

DISTRIBUTION: Temperate regions.

ILLUSTRATIONS: Cooke, Brit. Fungi *pl.* 561 (576); Gill. Champ. Fr. *pl.* 131 (354); Hussey, Ill. Brit. Myc. 2: *pl.* 15; Pat. Tab. Fung. 1: *f.* 116; and others.

A common temperate species widely distributed on both coniferous and deciduous wood, and found in the greatest profusion on the Pacific coast. Plants found by me in Europe and America, and by Earle in Alabama, are recorded as having yellow, very bitter flesh. Several other specific names have been assigned to the plant in Europe. An old French chart includes it among the dangerous mushrooms.

3. *HYPHOLOMA CAPNOIDES* (Fries) Quél. Champ. Jura Vosg. 338.  
1873

*Agaricus capnoides* Fries, Obs. Myc. 2: 27. 1818.

*Geophila capnoides* Quél. Ench. Fung. 113. 1886.

Pileus fleshy, convex or nearly plane, obtuse, solitary or caespitose, 2.5–8 cm. broad; surface glabrous, dry, yellowish, often reddish or ochraceous on the disk; context white, with mild taste and odor; lamellae moderately close, adnate, dry, smoky-gray, becoming brown or purplish-brown; spores 7–8 x 4–5  $\mu$ ; stipe equal or nearly so, silky, striate at the apex, sometimes curved or flexuous, hollow, pallid, 4–8 cm. long, 4–6 mm. thick.

TYPE LOCALITY: Sweden.

HABITAT: Stumps and logs of coniferous trees.

DISTRIBUTION: Throughout the northern part of North America; also in Europe.

ILLUSTRATIONS: Cooke, Brit. Fungi *pl.* 559 (574); Fries, Ic. Hymen. *pl.* 133, *f.* 1; Gill. Champ. *pl.* 131 (353); Harper, Trans. Wisc. Acad. Sci. 17: *pl.* 74; Ricken, Blätterp. Deutschl. *pl.* 65, *f.* 5.

I have discussed this species in my articles on the fungi of the Pacific coast. Peck had a number of specimens, finding it alone, to the exclusion of *H. fasciculare*. Kauffman found neither species; Harper found both. Bresadola and I collected it in the Tyrol and I made the following notes from fresh specimens: "Looks like specimens I got in the Adirondacks. Smooth or cracked, glabrous, ochraceous, paler on the margin; veil slight, pallid, evanescent; gills pallid when young, adnate or adnexed,

rather distant, plane or arcuate; stipe smooth, shining, slightly fibrillose, pallid at the apex, darker and usually thicker below. Cespitose on dead pine wood. Flesh not noticeably bitter, lemon-yellow." Spores from these specimens are ovoid or ellipsoid, smooth, very pale yellowish under the microscope,  $7-9 \times 4-5.5 \mu$ . Specimens collected by Earle in New York also had yellowish flesh and a mawkish (not bitter) taste.

## DOUBTFUL AND EXCLUDED SPECIES

*Agaricus (Hypholoma) Artemisiae* Pass. Nuovo Giorn. Bot. Ital. 4: 82. 1872. Reported by Peck from Brewerton, New York, but the specimens were later found to belong in *Hebeloma*.

*Agaricus (Hypholoma) comaropsis* Mont. Syll. Crypt. 122. 1856. Collected at Columbus, Ohio, by Sullivant. Types not seen.

*Agaricus hirtosquamulosus* Peck, Bull. Buffalo Soc. Sci. 1: 53. 1873. Transferred to *Hypholoma* by Saccardo. Collected by Peck on maple logs in woods at Portville, Cattaraugus County, New York. Four specimens and a drawing are on the type sheet, where Peck has written "Not a good *Hypholoma*. *Naucoria*." Specimens in a box at Albany from St. Louis, Missouri, collected by Glatfelter, have gills colored like the types, but the surface is darker and more hairy, as in *Naucoria pennsylvanica*.

*Agaricus (Hypholoma) nitidipes* Peck, Ann. Rep. N. Y. State Mus. 35: 133. 1884. Collected by Peck at Albany, New York. The two poor specimens on the type sheet at Albany are marked by Peck "*Pholiota duroides*." They certainly do not appear to be a species of *Hypholoma*.

*Agaricus (Hypholoma) ornellus* Peck, Ann. Rep. N. Y. State Mus. 34: 42. 1883. *Pholiota ornella* Peck, Bull. N. Y. State Mus. 122: 151. 1908. See *Gymnopilus polychrous* (Berk.) Murrill, N. Am. Fl. 10: 204. 1917.

PILOSACE (Fries) Pat. Hymén. Eur. 122. 1887

In MYCOLOGIA for March, 1918, I discussed this genus from the standpoint of the two tropical American species assigned to it by Fries. It differs from *Agaricus* in lacking a veil. In 1904 Peck



characterized it as agreeing with *Pluteus*, but having black or purplish-brown spores. He mentioned 2 species from Europe, 2 from the West Indies, 1 from Africa, and 1 from the United States, this last being his *Pilosace eximia*, which is discussed elsewhere in the present number of MYCOLOGIA.

According to Harper, our *Stropharia epimyces* (Peck) Atk. is not distinct from *Pilosace algeriensis*, but he can not suggest to what group of fungi the species may belong. According to Kauffman, who retains it in *Stropharia*, "our plant is not a *Pilosace*." Fries based his subgenus *Pilosace* on *Agaricus tricholepis*, definitely characterized by *free gills*, and Patouillard subsequently raised it to generic rank.

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